Subset Schema

Modules Roadmap: You Are Here

- NIEM Overview
- IEPD Concepts
- How NIEM uses XML (pt. 1)
- How NIEM uses XML (pt. 2)
- Business Skills
- Exchange Content Modeling
- Mapping
- **Subsets**
- Extension and Exchange Schemas
- Packaging and Distribution
- Implementation Considerations

Objectives Roadmap

This module supports the following course objective:

- Describe what NIEM is.
- Describe what an IEPD is.
- Comprehend artifacts included in an IEPD.
-  **Develop artifacts included in an IEPD.**
- Package an IEPD.
-  **Understand advanced XML concepts, as required by NIEM.**
- Recognize business skills required to successfully participate in an IEPD development project.

Module Objectives

- After completing this module, you should be able to:
  - Describe what a subset is.
  - Explain the role and purpose of a subset.
  - Create a subset schema.
  - Modify a subset to enforce cardinality.
  - Select the NIEM components that are used in an IEPD.

Subset Schema Defined

- A set of XML schemas that comprise a subset of NIEM, containing only the NIEM components you need for your IEPD.
- Your IEPD will likely use only a relatively small part of NIEM, so you can leave out components you don't need, such as:
  - Entire domains
  - Large code lists
  - Objects that are not used

Why Generate a Subset Schema?

- Assists in focusing IEPD content to only that required to meet business needs.
- Significantly improves XML Schema validation performance.
  - Important in implementations that perform runtime XML validation.
- Makes automatic software code class generation practical.
  - Important in implementations that generate classes from the XML Schemas.
- Makes it easier for implementers to consume your IEPD.

Wantlist

- A Wantlist is an XML document that specifies the NIEM components you want in your Subset Schema.
- Built in accordance with the Wantlist Specification.
- Tools used to capture detailed business data requirements may generate a Wantlist.

How Do I Produce a Subset Schema?

(1 of 2)

- You can use the online Subset Schema Generator Tool (SSGT) to:
  - Discover NIEM components
  - Select NIEM components
  - Generate the Subset Schema
  - Produce a Wantlist to save in-process work
  - Read a Wantlist to resume in-process work or simply generate the Subset Schema

How Do I Produce a Subset Schema?

(2 of 2)

- You can use available tools, or write your own.
- The SSGT can generate the Subset Schema from a wantlist to ensure all dependent components are included.
- Note that the SSGT deals only with the Subset Schema – it is not designed to help with extensions components.

Demonstration of SSGT

- Selecting components
- Generating a wantlist
- Loading a wantlist
- Generating an XML Schema

Component Selection Tips *(1 of 5)*

- Use your mapping spreadsheet (or other mapping documentation) as a source for which NIEM components to select.
- Give thought to selecting:
  - Properties
  - Types
  - Child properties of a parent complex type
  - Facets (primarily enumerations)
  - Associations

Component Selection Tips *(2 of 5)*

- Selecting a property also selects its type.
- Selecting a type does not select any properties that are of that type.
  - If you want the property, select the property instead of the type.
  - Don’t select the property if you only want the type (because you are only going to use it with an extension property).

Component Selection Tips *(3 of 5)*

- Selecting a type (or a property of that type) does not select any of the type's child properties.
  - You must also select the properties you want.
- Selecting a property does not select the parent type unless the parent is displayed.
  - You often also want to select the parent complex type, but not if you are only using the property with your own type.

Component Selection Tips *(4 of 5)*

- Don’t forget to select child properties of types that may seem to be simple types but are really complex types.
  - Date, Measure, etc.
- Selecting an element with a code representation does not select any of the enumeration facets.
  - Select the enumerations you want.
  - Select them last for best SSGT performance.

Component Selection Tips *(5 of 5)*

- In the subset view, types are displayed first, then properties, in namespace order.
- Items you added may be deleted (using the checkbox).
  - Except properties added from within a type hierarchy cannot be deleted.
- Items automatically added due to dependencies cannot be deleted.

Completing the Subset Schema

- You can make sure your Subset Schema is complete by:
  - Comparing your mapping spreadsheet to the Subset Schema.
  - Comparing your mapping spreadsheet to a sample XML instance that validates to the Exchange Schema (including the imported Subset Schema).
  - An automatically generated XML instance can be used to find components you didn't intend to add.

Exercise 15.1: Subset Schema

- Given a mapping spreadsheet, use the SSGT to:
  - Select components
  - Generate a wantlist
  - Load a wantlist
  - Generate a subset schema

Mapping-Subset Example

Constraints

- You can further constrain your Subset Schema to a limited extend by adding restrictions.
  - Change minOccurs and maxOccurs to restrict cardinality.
- The constrained Subset Schema will probably not capture all of your IEP business rules due to the limitations of XML Schemas and the structure of NIEM.

Additional Validation *(1 of 2)*

- Depending on how the receiving system is using the data, additional application-level validation may be necessary.
  - Is your system only transforming the data for display to a user?
  - Is your system responsible for completely validating the data before forwarding it?
  - Is your system storing the data in your database with a need to maintain data integrity?

Additional Validation *(2 of 2)*

- Does your implementation appropriately handle validation failures?
- Some examples:
  - Cross-field validation (e.g., if field A is present, field B must also be present).
  - Additional, dynamic constraints on dates (e.g., a PersonBirthDate can't be a future date).
  - Some elements may require programmed validation algorithms.

Exercise 15.2: Schema Constraints

- Given the business rules on the mapping spreadsheet and the Subset Schema developed in the previous exercise:
  - Add constraints to the Subset Schema where possible.
  - Identify business rules that cannot readily be represented as constraints in the Subset Schema.

Subset Schema Conclusions

- The Subset Schema is a key IEPD artifact because it specifies the NIEM components used by your IEPD.
- Subset Schema development uses the output of the mapping process step.
- The SSGT can be used to generate the Subset Schema.
- Other tools may be available to produce a wantlist.

Case Study

NIEM Practical Implementer's Course

Case Study

- Subset Generation Exercise
  - Shows the importance of adding “facets” to their subsets by adding a nc:Person/nc:PersonSex to the schema subset and showing how one must add the facets in order for them to be included in the subset (Male, Female, Unknown).
  - Create the NIEM subset based on the elements and data types that were identified in the mapping exercise

Case Study Solution

- Subset Generation Exercise Solution

ubset Generatior
Solution

Module Summary

- After completing this module, you should be able to:
  - Describe what a subset is.
  - Explain the role and purpose of a subset.
  - Create a subset schema.
  - Modify a subset to enforce cardinality.
  - Select the NIEM components that are used in an IEPD.

Creative Commons

creative commons
COMMONS DEED

Attribution-ShareAlike 2.0

You are free to

- Copy, distribute, display, and perform the work
- Make derivative works
- Make commercial use of the work

Attribution—You must give the original author credit

ShareAlike—If you alter, transform, or build upon this work, you may distribute the resulting work only under a license identical to this one

Under the following conditions

- For any reuse or distribution, you must make clear to others the license terms of this work
- Any of these conditions can be waived, if you get permission from the copyright holder

Your fair use and other rights are in no way affected by the above

This is a human-readable summary of the Legal Code (the full license) and Disclaimer

This page is available in the following languages
Català, Deutsch, English, Castellano, Suomeksi, français, hrvatski, Italiano, 日本語, Nederlands, Português, and 中文(繁)

Learn how to distribute your work using this license